

ASSEMBLY

FOR SUPPORTING EXPANSION CARD ON MOTHERBOARD

FIELD OF THE INVENTION

5 The present invention relates to support assemblies and more particularly to a support assembly for reliably holding up an expansion card on a motherboard of server.

BACKGROUND OF THE INVENTION

10 In response to all kinds of new information products being developed, especially when personal computers being widely used, more and more users become more critical with respect to the convenience in using them. For increasing data transfer speed of computer peripherals, a PCI (Peripheral Component Interconnect) local bus being developed by Intel Corp. PCI has
15 become the widely used bus in its respective market. This means that other low speed buses (e.g., ISA (Industry Standard Architecture), etc.) will gradually be replaced by PCI in the computer market.

 Currently, installing expansion slots on a motherboard of computer for inserting PCI-compliant expansion cards is a dominant stream in the market. For
20 a typical ATX type motherboard, there are five (5) or more PCI expansion slots are provided thereon. Conventionally, the higher the number of expansion slots on the motherboard means the more powerful of the expansion capability of computer is. In this regard, all major computer and/or electronics companies continuously make efforts to develop and/or improve the structures of expansion
25 slots and cards in order to meet the needs of vast consumers. To the contrary, arrangements for fastening the expansion card are rarely improved.

 For the current industrial IU (IU=44.45mm) servers, in addition to a

motherboard installed therein, only few associated electronic devices can be provided in the IU server due to the limitation of server height. However, in order to improve the performance of the server, an additional expansion card (e.g., the above PCI expansion card) is mounted on the motherboard for increasing the processing capability of the server.

Due to the limited server height, a typical process of installing an expansion card on a motherboard is by coupling the expansion card to a dummy adapter so as to change an orientation of inserting the expansion card to an expansion slot on the mother board of the server. Though the prior process can avoid the limitation of server height, it still suffered from several disadvantages. For example, the structures for supporting and fastening the expansion card on the motherboard are weak and unreliable. This means that the expansion card is susceptible to the vibration, which would easily cause the coupling between the expansion card and the dummy adapter loosened, resulting in a breakdown of the computer. To the worse, golden fingers of the expansion card can be damaged. Thus, it is understood that if no effective support and fastening means is provided, more inconvenience and trouble in replacing a malfunctioned expansion card or installing a new expansion card in the expansion slot would keep on troubling users. Consequently, this may cause users to complaint more about the fastening in installing an expansion card and discourage users to install new expansion cards. As a result, it will hardly hurt the market of supplying the expansion card.

In another point of view, for keeping up with the needs of the vast computer assembly market, computer manufacturing companies not only have to maintain product quality but also have to increase the assembly speed. Therefore, with respect to the requirement of increasing the assembly speed in the assembly line, particularly to the fastening of expansion cards has become an important

factor in increasing computer assembly speed.

SUMMARY OF THE INVENTION

A primary object of the present invention is to provide a support assembly
5 for holding up an expansion card on a motherboard of an electronic device (e.g.,
server). The support assembly comprises a pedestal, and a pivotal carrier
pivotaly coupled to an upper part of the pedestal, the pivotal carrier comprising
a horizontal trough adjacent a top. In response to an insertion of the expansion
card into an expansion slot of the motherboard by means of a dummy adapter,
10 an edge of the expansion card is urged on a bottom distal end of a trough in the
dummy adapter, and the edge of the expansion card is adapted to cling into the
trough for fastening by turning the pivotal carrier. As a result, the purpose of
reliably supporting the expansion card is achieved. The support assembly of the
invention can quickly install and fasten the expansion card on the motherboard
15 without requiring screws. Further, the support assembly has advantages of being
compact, simple, convenient assembly or disassembly, and ergonomic. By
utilizing this, the above drawbacks of the prior art can be overcome. These
drawbacks are that server height is limited, both support and fastening of the
expansion card on the motherboard are weak and unreliable, the expansion card
20 is susceptible to the vibration in the expansion slot, a coupling between the
expansion card and the dummy adapter tends to loosen, resulting in a
breakdown of computer, and golden fingers of the expansion card tend to
damage.

The above and other objects, features and advantages of the present
25 invention will become apparent from the following detailed description taken with
the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a preferred embodiment of support assembly according to the invention;

FIG. 2 is a sectional view depicting the support assembly interconnected an expansion card and a motherboard during mounting; and

FIG. 3 is similar to FIG. 2, the support assembly being mounted.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 1, 2 and 3, there is shown a support assembly for holding up an expansion card on a motherboard 30 of an electronic device (e.g., server) in accordance with the invention. As shown in FIG. 1, the support assembly comprises a pedestal 10 and a pivotal carrier 20. The pedestal 10 is a substantially cubic, hollow frame in the embodiment, while it is appreciated by those skilled in the art that the pedestal 10 may have any of other shapes without departing from the scope and spirit of the invention. A plurality of pegs 11 are formed on an underside of the pedestal 10. The pegs 11 are adapted to insert into a plurality of holes 31 on the motherboard 30 so as to secure the support assembly to the motherboard 30 (see FIGS. 2 and 3). A predetermined distance is maintained between any two adjacent pegs 11. Also, a longitudinal gap 111 is formed in the peg 11 so that the peg 11 can have a good flexibility for facilitating its insertion for fastening or removal. The pedestal 10 further comprises a top positioning section 12 having a length sufficient to permit the pivotal carrier 20 and two sides pivots 21 of the pivotal carrier 20 having one ends fitted in two side holes 101 of the pedestal 10 to pivot about the holes 101.

In the invention a horizontal trough 13 is formed between a top of the pivotal carrier 20 and the positioning section 12 (see FIGS. 1, 2 and 3). A slanted surface 131 is formed from a bottom distal end of the trough 13 toward the

trough 13. The slanted surface 131 is disposed above the positioning section 12 of the pedestal 10. The provision of the slanted surface 131 facilitates an edge of an expansion card (e.g., PCI-compliant expansion card) 40 to urge downward thereon. At the same time, the edge of the expansion card 40 is adapted to pass the slanted surface 131 to cling into the trough 13 by turning the pivotal carrier 20.

In the invention at least one positioning member 14 is formed on a bottom of the pivotal carrier 20 facing the positioning section 12. The positioning member 14 is implemented as a projection and is disposed under the positioning section 12 of the pedestal 10. The provision of the positioning member 14 can limit a pivotal angle of the pivotal carrier 20 as the positioning member 14 is urged against the positioning section 12 by turning the pivotal carrier 20 (see FIG. 2).

It is obvious from the above configuration that a process of installing the expansion card (e.g., PCI-compliant expansion card) 40 comprises inserting the pegs 11 of the pedestal 10 into the plurality of holes 31 on the motherboard 30 (see FIGS. 2 and 3), horizontally inserting one end of a dummy adapter 50 together with the expansion card 40 mounted thereon through its golden fingers (not shown) into an expansion slot 32 of the motherboard 30 (see FIG. 2) with the edge of the expansion card 40 urged on the bottom distal end of the trough 13 in the pivotal carrier 20, and quickly cling the edge of the expansion card 40 into the trough 13 (see FIG. 3). As a result, the expansion card 40 is reliably fastened. This can eliminate prior problems of vibration and loosening due to no support and fastening for the expansion card 40.

Referring to FIG. 1 again, in the invention a protuberance 22 is formed adjacent either side pivot 21 of the pivotal carrier 20. Also, a protrusion 102 is formed adjacent either side hole 101 of the pedestal 10. The provision of both the protuberances 22 and the protrusions 102 can prevent the pivotal carrier 20

from further turning once the pivotal carrier 20 has turned a predetermined angle, i.e., the pivotal carrier 20 is fastened.

In view of the above, the support assembly of the invention can quickly install and fasten the expansion card 40 on the motherboard 30 without requiring
5 screws. Most importantly, the support assembly has the advantages of being compact, simple, convenient assembly or disassembly, and ergonomic.

While the invention has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the
10 claims.